



DuPont Fluoroproducts

May 21, 2004

DuPont Fluoroproducts
Chestnut Run Plaza
P. O. Box 80711
Wilmington, DE 19880-0711

Stephen L. Johnson
Acting Deputy Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Johnson:

We want to thank you and your staff for taking time from your schedules to meeting with DuPont representatives on Friday, April 30, 2004. We found the meeting to be very useful, and we hope you found the information we presented to be useful and informative.

Enclosed please find a copy of the charts we used during our discussion. During our discussion we reviewed two topics. The first was an update of our progress on PFOA emissions reductions and product reformulation to reduce exposure potential. The second was a preliminary view of work done on exposure characterization of consumer articles. On this second topic we will plan follow-up meetings with your staff to review this study in greater detail.

Relative to the significant air and water emissions reductions achieved over the last 5 years we highlighted the specific accomplishments at both the Washington Works Plant in West Virginia and the Chambers Works Plant in New Jersey. These reductions were accomplished using internally developed technology that was specifically optimized to address both air and water emissions of PFOA.

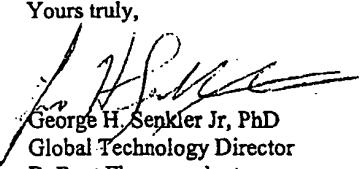
As reported during our meeting, we recently developed technology to reduce the PFOA content of our aqueous dispersion fluoropolymer products. These products are used in a range of industrial applications, and the reformulation of these products will significantly reduce the potential for emissions from processor locations.

The data we presented on new process chemistry for the manufacture of fluorotelomers highlighted the progress made in significantly reducing the already very low levels of both PFOA and PFOA precursors. As additional work becomes available on our progress to achieve these reductions on a commercial scale, we will share that progress with EPA.

On the second topic we discussed, we presented some preliminary data from a peer-reviewed study of the exposure characterization of consumer articles that we plan to issue in the near future. As we reported to you, the potential for exposure from these consumer products is very low, and consequently the margins of exposure (margins of safety) are very high, reaffirming the safety of consumer products. We fully recognize that EPA may need to examine this work from its own perspectives, but we believe that the study will be most useful in prioritizing and focusing future work. Additional product work remains to be done, and as these results become available we will share the data with the agency.

Again, thank you for taking time to meet with us. Let me reiterate that we are committed to continuing to work cooperatively with the agency on this matter.

Yours truly,


George H. Sepkler Jr., PhD
Global Technology Director
DuPont Fluoroproducts

**PFOA Reduction Report
For EPA
April 30, 2004**

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Outline

- Introduction/Objectives for Update
- Summary
- Manufacturing Technology Improvements
 - Plant Site Reductions
 - Future Reductions
- Product Technology Improvements
 - Manufacturing Process Reductions
 - Product Reductions
- Consumer Article Exposure Data
- Executive Summary
- DuPont Next Steps



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Meeting Objectives

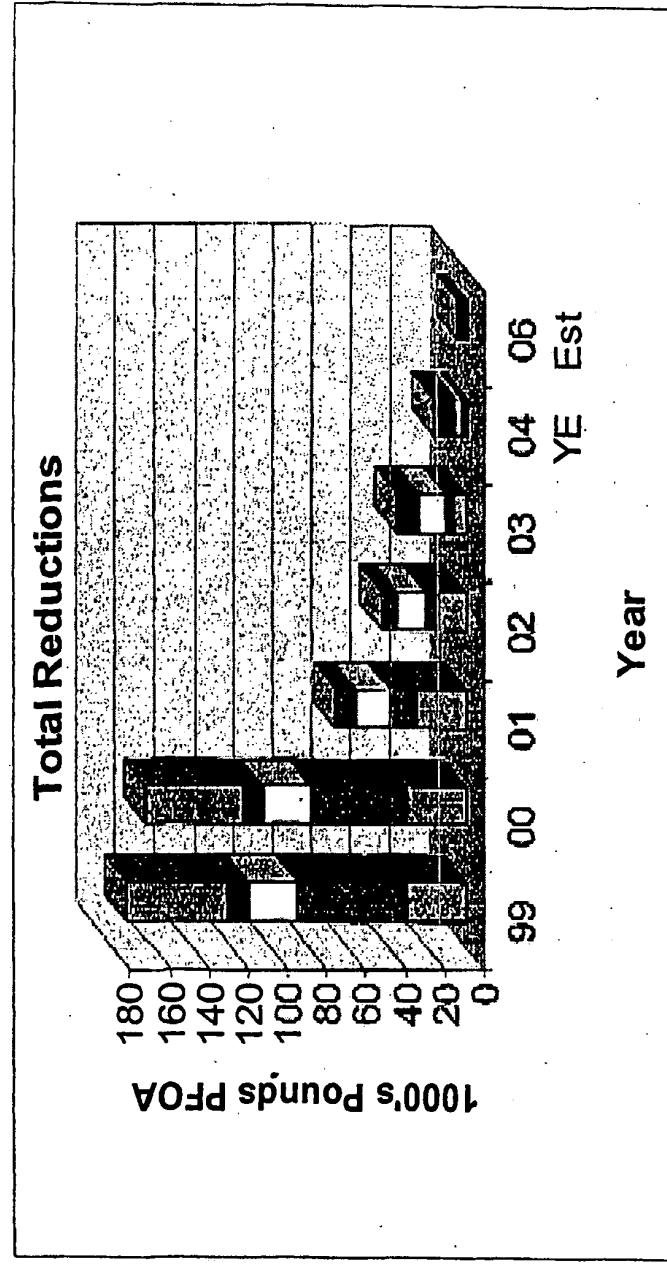
To share with you.....

- Reductions in DuPont site air and water emissions from manufacturing process improvements
- Reductions of PFOA levels and potential PFOA precursors in products
- Plans for future reductions
- The net effect of reductions on exposure potential
- Experience gained over the last year concerning potential exposure to PFOA
- Current understanding of PFOA 'contribution by source'



Summary - Significant Reduction 1999-2006

- 98% Reduction in Manufacturing Emissions
- 90% Reduction in Dispersion Product Content
- >85% Reduction in Telomer End Use Products



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Manufacturing Process Improvements

- Manufacturing processes overall have lowest emissions ever attained
- More than \$60MM of capital invested

APFO Manufacture

- DuPont began manufacturing APFO in 2002 to replace purchased APFO
- 99% reduction in PFOA emissions from APFO manufacturing process

Fluoropolymer Manufacture (lbs)

- WV 87000 '99 -----> 3100 '04 YE -----> <2600 '06 EST
- NJ 25200 '99 -----> 3800 '04 YE -----> <1100 '06 EST

Telomers Manufacture (lbs)

- WV < 1 '02 -----> < 1 '04 -----> < 1 '06 EST
- NJ < 200 '02 -----> < 200 '04 -----> < 50 '06 EST

Air and H₂O ('99 - '04YE)

- 96% reduction in emissions from WV operations
- 85% reduction in emissions from NJ operations

Data as of April '04



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**DuPont Manufacturing Emissions Data
(Thousand Lbs PFOA)**

Fluoropolymer Manufacture

	<u>'99</u>	<u>'00</u>	<u>'01</u>	<u>'02</u>	<u>'03</u>	<u>'04 YE</u>	<u>%Red</u>	<u>'06 Est</u>
Air WV	31	31	26	15	6	1.1	96	1.1
H ₂ O WV	56	49	14	6	5	2.0	96	1.5
Air NJ	0.3	0.3	0.2	0.1	0.2	0.1	67	0.1
H ₂ O NJ	24.9	24.4	17.6	14.8	14.5	3.7	85	1.0
Totals	112.2	104.7	57.8	35.9	25.7	6.9	94	3.7

APPFO Manufacture

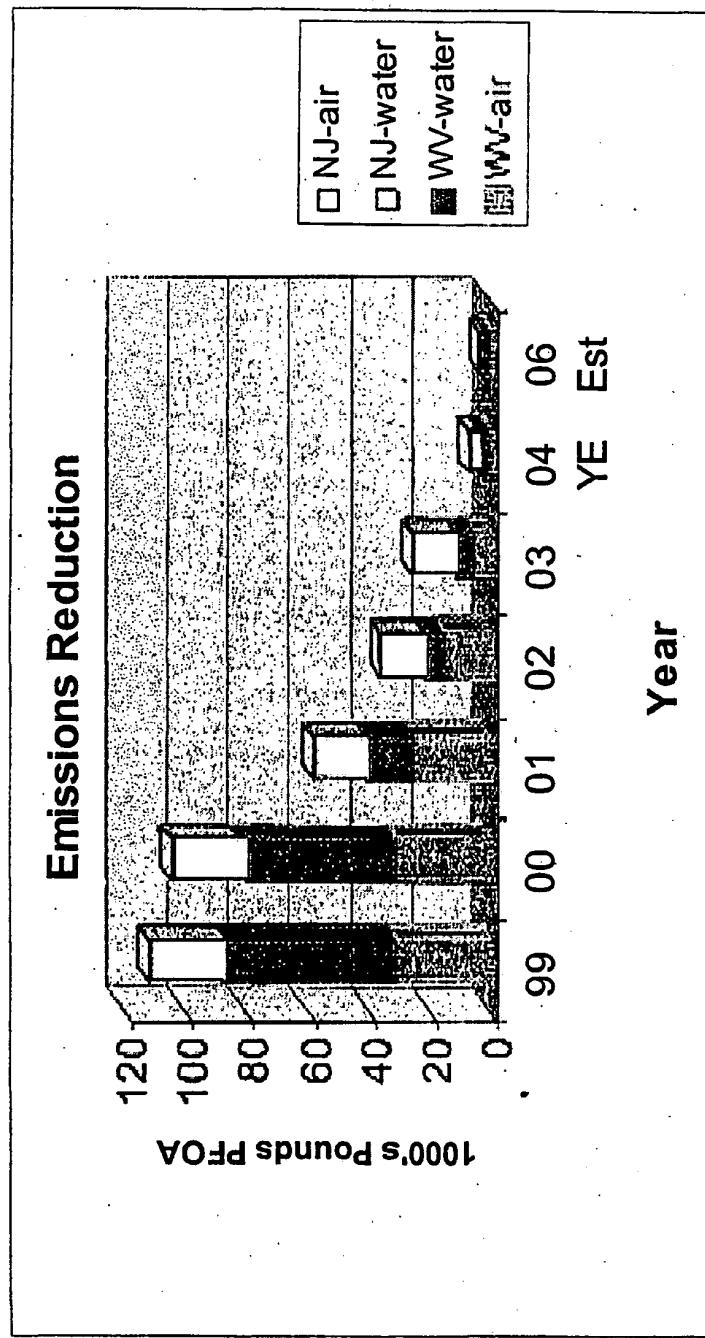
3M	50	50	0	0	0	0	0	0
DuPont	0	0	0	<0.1	<0.1	<0.1	<0.1	<0.1

Total Emissions Reduction 98% ('99-'06); 96% ('99-'04 YE)

Data as of April '04



Impact of Reduction - Fluoropolymer Manufacture



**Data as of
April '04**

Fluoropolymer Product Data (Thousand lbs PFOA)

Dispersion Products*	<u>'99</u>	<u>'00</u>	<u>'01</u>	<u>'02</u>	<u>'03</u>	<u>'04</u>	<u>'06 Est</u>
11	10	10	7	11	11	<1	<1

Total Estimated Emission Reduction >90%

* PFOA content in dispersion products
is generally 1000-1500 ppm today

Data as of April '04

DuPont Telomer Product Research Effort

- EPA PFOS/PFOA process prompted comprehensive evaluation
- Launched wide-ranging product/process research & analysis
- Research revealed trace PFOA product impurity levels
- Undertook intensive process re-engineering
- Process/product redirections identified; scale-up in progress



DuPont Telomer Research Progress on Product Improvements

Telomer B Alcohol (Basic Raw Material)

- >95% Reduction in PFOA
- >95% Reduction in Potential Precursors*

Textiles

- >90% Reduction in PFOA
- >95% Reduction in Potential Precursors*, **

Paper

- >80% Reduction in PFOA
- >90% Reduction in Potential Precursors*, **

Carpet

- >80% Reduction in PFOA
- >80% Reduction in Potential Precursors*, **

CBI has been
redacted

*Potential Precursors: 8-2-8 ester and
telomer C8 iodide; **alcohol work in progress

Data as of April'04



DuPont Exposure Assessment and Risk Characterization of Consumer Articles

- Objective:
 - To estimate theoretical exposure and conduct risk characterization from consumer products
- Conducted by ENVIRON
- Peer reviewed by independent scientific panel
- Moderated by Dr. George Gray, Prof. of Risk Assessment at the Harvard School of Public Health



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Articles Included in the Assessment

Quantitative Evaluation of:

- Medical garments
- Carpeting
- Carpet care products
- Textiles (Apparel)
- Thread sealant tape
- Cookware
- Membranes (Apparel)
- Food contact paper*

Quantitative Evaluation (Ingredients-basis) of:

- Stone, tile and wood sealants
- Industrial floor waxes and wax removers
- Latex paint
- Home and office cleaning products
- Textiles (Upholstery)
- Textiles (Home)
- Textiles (Technical)

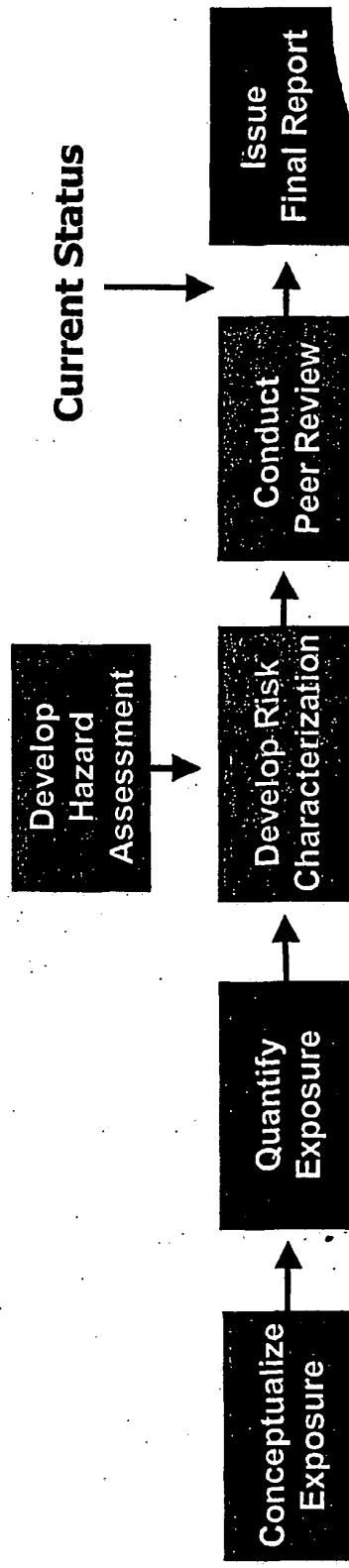
Qualitative Evaluation:

- Cable and wire
- Hose and tubing
- Membranes (Architectural)

*Analytical method for food contact paper under development.


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Exposure Assessment and Risk Characterization Work Process



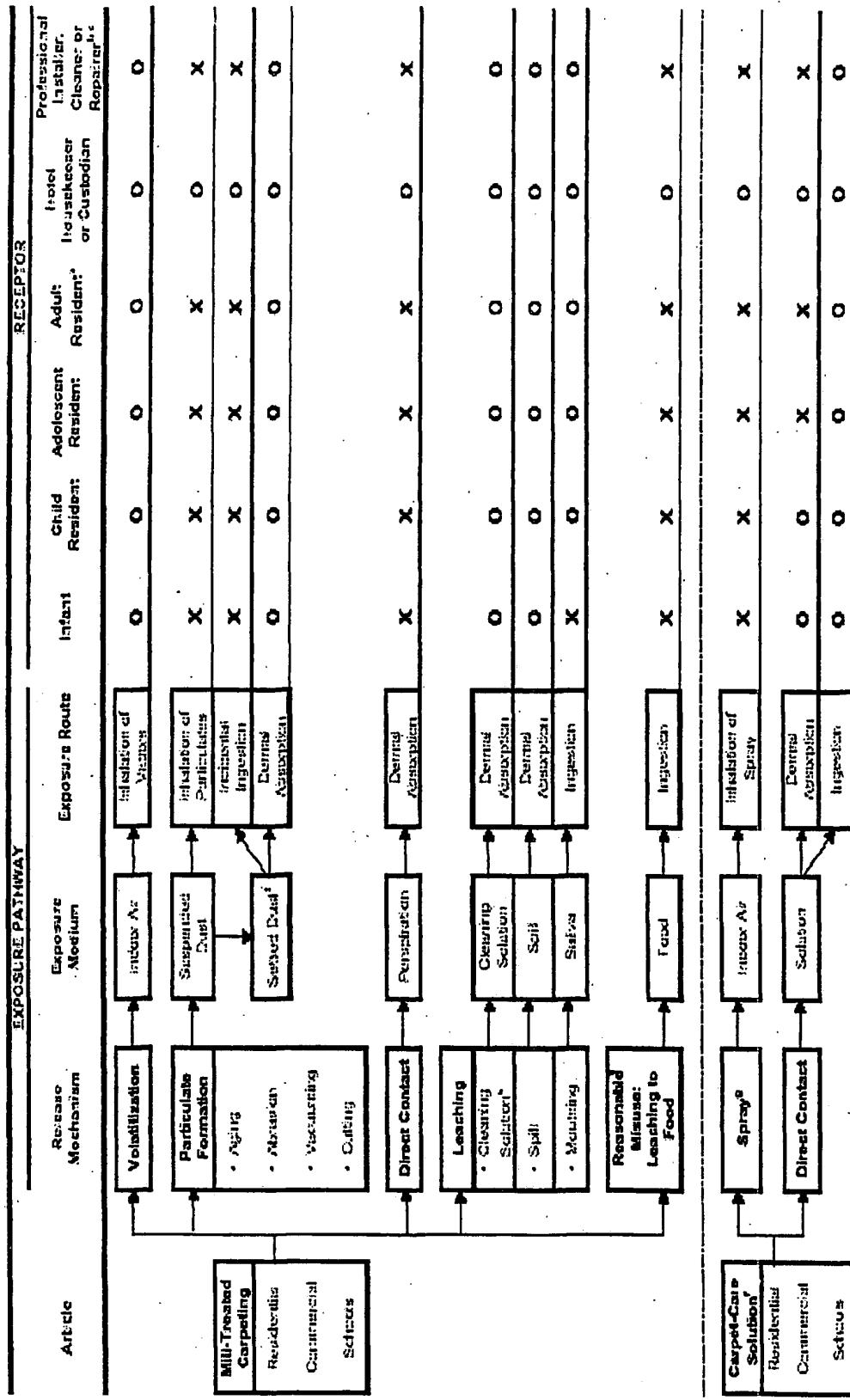
Conceptual Exposure Model

- Developed conceptual exposure models for various articles:

- Release mechanisms (e.g. abrasion, mouthing, etc.)
- Exposure media (e.g. suspended dust, food, etc.)
- Exposure routes (e.g. dermal absorption, ingestion, etc.)
- Receptor populations
 - Infants 0-2 years
 - Children 2-12 years
 - Adolescents 12-18 years
 - Adults 18-70 years
 - Adult Trade Professionals 18-70 years

- Identified pathways for exposure quantification

Figure 2. Conceptual Diagram for Exposure to Carpeting and Carpet-Care Solution



NOTES:
 X = Substances of Potential Health Risk
 ○ = Evidence-Based for the Scenario Under the Current Conditions. Additional information on other substances can be found in the "Additional Information" section.

Mill-Treated Carpeting Example

Hypothetical Cumulative RME Intakes and Corresponding MOE Values

Article Group	Hypothetical Annual Average RME Intake (mg/kg-day)	Hypothetical Lifetime Average RME Intake (mg/kg-day)	MOE for Developmental Effects	MOE for Noncancer Effects	MOE for Cancer Effects
Mill-Treated Carpeting					

<i>Infant</i>	6×10^{-5}		400,000	70,000	
<i>Child</i>	5×10^{-5}			80,000	
<i>Adolescent</i>	2×10^{-6}				2,000,000
<i>Adult Resident</i>	9×10^{-7}	9×10^{-6}			4,000,000
<i>Professional</i>	8×10^{-7}	3×10^{-6}			600,000
					5,000,000
					20,000,000

RME = Reasonable Maximum Exposure

MOE = Margins of Exposure (Safety)

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Data as of 28 April, 2004



Results and Conclusions

Exposure Assessment

- No PFOA detected in coated cookware or nonwoven medical garments
- Trace levels of PFOA detected in other end-use articles that were tested
- Based on the conservative assumptions used in the model
 - margins of exposure for all articles tested ranged from 30,000 to 5 billion
 - use of the consumer articles tested should not result in detectable levels in the blood based on exposure and kinetic models

Executive Summary

- Achieved 98% reduction in manufacturing emissions; work continues
- We are pleased with the results of the exposure assessment study; we will continue with our reduction programs
 - Technology has been identified and is being implemented to achieve >90% reduction in polymer dispersion product content
 - Technology identified to achieve >85% reduction of trace impurities in telomer products
- Consumer article exposure assessment study reaffirms safety of DuPont products in consumer articles



DuPont Next Steps

- Ongoing ECA, LOI, MOU commitments (both industry consortia and DuPont)
- Further DuPont telomer product testing: pharmacokinetics, toxicology, biodegradation, and incineration
- Further reduce manufacturing emissions
- Implement identified technologies for products:
 - PFOA reduction in polymer dispersion product content
 - PFOA and precursors in telomers
- Complete consumer article analysis (finish work on products and aged articles)
- Conduct Washington Works employee health study

